

Program Change Proposal

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CHEM-PHD: PhD in Chemistry

Doctoral Degree Requirements

Within one year of initial enrollment, incoming doctoral students must demonstrate proficiency in four of the following five areas: biochemistry, organic, inorganic, physical, and analytical chemistry. ~~within one year of initial enrollment.~~ A minimum of 60 credit hours is required, including research hours.

Distribution Requirement

~~Students must take chemistry courses for graduate credit at the 4000 and 5000 levels. Students may choose to concentrate the majority of their coursework in one of four areas (biochemistry, inorganic chemistry, organic chemistry, or physical chemistry). Students must complete at least 6 hours of chemistry coursework in one (or more) sub-disciplines(s) outside of their major emphasis area. The following courses may not be used to fulfill the distribution requirement:~~

CHEM 4212	Instrumental Analysis	2
CHEM 4233	Laboratory In Instrumental Analysis	2
CHEM 4302	Survey Of Physical Chemistry With Applications To The Life Science	3
CHEM 4343	Physical Chemistry Laboratory II	2
CHEM 4412	Advanced Inorganic Chemistry	3
CHEM 4433	Inorganic Chemistry Laboratory	2

Qualifying Examinations

~~In addition to the requirements set forth by the Graduate School, each student seeking the Ph.D. degree must successfully complete a qualifying examination in his/her major area of specialization prior to advancement to candidacy. The format of the qualifying examination depends upon the student's major area of emphasis (biochemistry, inorganic, organic or physical). In general, the qualifying examination consists of either comprehensive written and/or oral examinations, usually administered near the end of the 4th semester, or a series of cumulative examinations given eight times a year. In the latter case, a student must pass a minimum of two cumulative examinations per year and eight cumulative examinations before the end of the 6th semester. At least six of these cumulative examinations must be in the student's major area of specialization. For more detailed information, contact the Director of Graduate Studies in the Department of Chemistry & Biochemistry.~~

Comprehensive Exam Committee

Before the end of the second regular semester of study, the doctoral student and his/her research advisor will select a comprehensive exam committee. The student should prepare Graduate School form D-1, which should be signed by the research advisor and the Director of Graduate Studies, and filed with the graduate school.

In the Department of Chemistry & Biochemistry, the comprehensive exam committee also serves as a mentoring committee for the student. The committee will meet with the student at the end of each spring semester to review progress in coursework and research. A written report summarizing their assessment and recommendations will be provided to the student and the Director of Graduate Studies.

Comprehensive Examinations

Each student seeking the Ph.D. degree must successfully complete a comprehensive examination prior to advancement to candidacy. The comprehensive exam is typically taken when formal coursework has been completed, but it must be completed before the start of the fifth regular semester.

The comprehensive exam consists of writing an original research proposal and an oral defense that will be evaluated by the student's committee. The student will select a topic that is not directly related to the expected research area. The research advisor must approve the topic. The specific format for the proposal is described in the Department of Chemistry & Biochemistry Handbook of Graduate Studies.

Dissertation Proposal

Doctoral students must prepare and defend a Dissertation Proposal before the student has completed the equivalent of 6 regular semesters of full-time study. The proposal should be defended within six months following successful completion of the Comprehensive Examination.

The Dissertation Proposal includes both a written and oral component. Both components will be evaluated by the student's Comprehensive Examination committee. The written proposal will be submitted to the Comprehensive Examination committee and will be presented as a seminar to the Department. After the seminar, the student will defend the proposal before the Comprehensive Examination committee.

Seminar Requirement

~~Students must present a seminar in their third year and during each subsequent year. The third year seminar may be the defense of the doctoral dissertation proposal. One of the seminars is for the purpose of describing dissertation research. Students must enroll in CHEM 6897, Chemistry Colloquium, each semester they are in residence.~~

Advancement to Candidacy

In addition to general Graduate School requirements for advancement to candidacy, students must complete the following:

1. ~~24~~ 18 hours of non-dissertation work.
This may not include:

<u>CHEM 4212</u>	Instrumental Analysis	2
<u>CHEM 4233</u>	Laboratory In Instrumental Analysis	2
<u>CHEM 4302</u>	Survey Of Physical Chemistry With Applications To The Life Scienc	3
<u>CHEM 4343</u>	Physical Chemistry Laboratory II	2
<u>CHEM 4412</u>	Advanced Inorganic Chemistry	3
<u>CHEM 4433</u>	Inorganic Chemistry Laboratory	2
<u>CHEM 4712</u>	Biochemistry	3
<u>CHEM 4733</u>	Biochemistry Laboratory	2
<u>CHEM 6196</u>	Advanced Reading In Chemistry	1
<u>CHEM 6487</u>	Problem Seminar In Inorganic Chemistry	1
<u>CHEM 6687</u>	Problem Seminar In Organic Chemistry	1-3
<u>CHEM 6787</u>	Problem Seminar In Biochemistry	1
<u>CHEM 6812</u>	Introduction To Graduate Study In Chemistry	1

CHEM 6822	Introduction To Graduate Research In Chemistry	1
CHEM 6897	Chemistry Colloquium	1

~~but should include at least six credit hours of coursework outside of their major area of emphasis (see Distribution Requirement)~~ At least 9 of the 18 credits of non-dissertation coursework must be at the 5000 level. Courses in areas other than chemistry may be included with prior departmental approval.

2. Successfully pass a qualifying ~~examination or cumulative examinations~~ Comprehensive Examination.
3. ~~Present at least one seminar to the department on the dissertation research~~ Successfully present and defend a dissertation proposal.
4. ~~Participate in the undergraduate academic program as a teaching assistant for at least one semester~~ Submit the proposal for approval to the Graduate School.
5. Be in good standing.

Seminar Requirement

Students must enroll in CHEM 6897, Chemistry Colloquium, each semester they are in residence. In their final semester in the program, each student will present an "exit seminar" to the Department describing the results of their dissertation research.

Dissertation

~~Three copies~~ One copy of the dissertation must be submitted upon completion of the graduate research problem.

Probation and Dismissal

Students are dismissed from the Ph.D. program if they fail to pass their ~~qualifying examination~~ Comprehensive Examination or otherwise fail to meet the academic and professional standards set forth by the Graduate School and the Department of Chemistry and Biochemistry.

Sign-offs from other departments affected by this proposal

None

Rationale

We propose that development of an independent research proposal requires substantially more intellectual effort by students than completing a series of general two hour exams. We suggest that construction of an independent research proposal allows for each student to actively participate in how deductive reasoning and the scientific method are linked. This pedagogical exercise provides an opportunity for students to search the literature, propose a hypothesis, and devise a series of experiments to investigate their assumptions (scientific method) on a research proposal that is separate from their thesis project(s). We believe that encouraging such skills development early in their graduate careers will greatly benefit their thesis research productivity and future independent research careers.